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Review Article



# Assessing the Alignment of International, Middle Eastern, and Saudi Arabian Food-Based Dietary Guidelines with The World Health Organization Dietary Guidelines Criteria: A Review

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## Abstract

**Introduction:** Food-Based Dietary Guidelines (FBDGs) allow health information and nutritional messages from dieticians, nutritionists, and other health professionals to reach the general population. The national FBDGs in Saudi Arabia are usually developed by governmental authorities such as the Ministry of Health and the Saudi Food and Drug Authority, given their responsibility to promote healthy eating habits and prevent chronic diseases in the Saudi population.

**Methods:** This review provides an overview of FBDGs at the international and Middle Eastern levels, and at the national level in Saudi Arabia, to analyze the extent of convergence of the majority of guidelines issued by countries toward the 12 World Health Organization (WHO) Dietary Guidelines criteria for the development of FBDGs.

**Results:** We found that most international FBDGs followed at least 10 of the 12 WHO criteria, which is more than that of the Middle Eastern and national guidelines.

**Discussion:** Overall, this review indicates the current situation of WHO criteria adherence worldwide and highlights the national-level need to adopt some of the WHO criteria to update the current Saudi FBDGs to align with the majority of international FBDGs, while considering modifications that suit the resources needed to implement the criteria.

**Keywords:** Dietary guidelines; Food-Based dietary guidelines; Dietary guidelines for saudi arabia; Food-Based dietary guidelines for saudi arabia; WHO criteria

## Introduction

Food-Based Dietary Guidelines (FBDGs) are a crucial informational resource that governments may use to increase the public awareness of dietary patterns that will supply the necessary nutrients to support general health and avoid chronic illnesses [1,2]. FBDGs offer appropriate dietary guidance using straightforward language and symbols that help prevent food-related health and nutritional issues [1]. In 1995, a Joint Expert Report titled "Preparation and Use of Food-Based Dietary Guidelines" was published by the World Health Organization (WHO) and Food and Agriculture Organization (FAO) [3] to delineate steps for countries to develop and evaluate their own FBDGs. The report describes the use of data on food intake to assess nutrient intake and the significance of providing advice that is simple to understand and culturally appropriate for the target audience [3]. In 1998, the WHO reported the availability of FBDGs in 90 countries (33 in Europe, 27 in Latin America and the Caribbean, 17 in the Asia–Pacific region, seven in Africa, four in the Near East, and two in North America) [4]. The WHO, Pan American Health Organization (PAHO), and FAO collaborated on the development of FBDGs in 38 of these 90 countries [4].

In the past four decades, the socioeconomic conditions, consumption patterns, lifestyle, and health status of Arab Gulf countries have changed rapidly [5]. In 1997, Bahrain hosted the inaugural workshop on Diet, Nutrition, and a Healthy Lifestyle of the Arab Gulf countries, which highlighted the importance of establishing FBDGs for the Arab Gulf countries and encouraging a healthy lifestyle to lower the incidence of nutritional illnesses [5].

Policymakers have detected the efforts made by different authorities at the national level in Saudi Arabia (SA). To date, the Ministry of Health (MOH) and Saudi Food and Drug Authority (SFDA) developed dietary guidelines that target the general population. The palm tree symbol of the MOH represents FBDGs for 2-year-olds and above, with the goal of promoting healthy eating habits and encouraging physical activity [6]. The palm tree was chosen as the symbol because of its importance from the socioreligious and historical perspectives. The Saudi Healthy Plate was developed by the National Nutrition Committee of the SFDA as a guide for improving the dietary habits of individuals in Saudi society [7].

### Objective and Scope

The objective of this study was to provides an overview of food-based dietary guidelines (FBDGs) at the international and Middle Eastern levels, and the national level in Saudi Arabia and assess the extent of convergence of the guidelines issued by countries toward the 12 World Health Organization (WHO) Dietary Guidelines criteria for the development of FBDGs.

## Materials and Methods

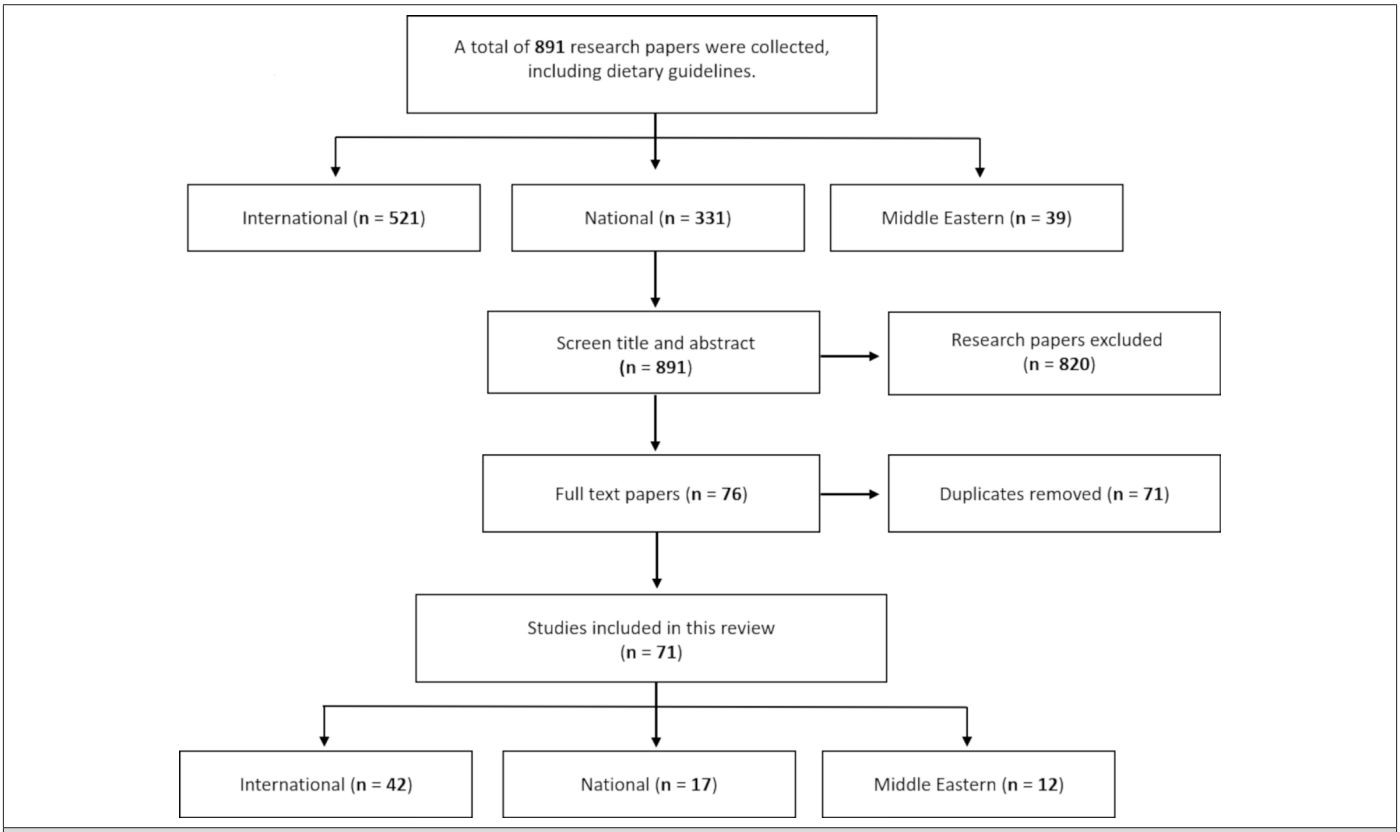


**Figure 1:** Flowchart of the inclusion of reports of food-based dietary guidelines in this review.

In this a narrative review for 71 dietary guidelines and articles (35 dietary guidelines and 36 articles) published until 2020. Dietary guidelines and articles were identified in the PubMed, Google Scholar, and Google Engine databases through dual-language (English and Arabic) searches of three keywords: "Food-based dietary guidelines for Saudi Arabia," "Food-based dietary guidelines," and "Dietary guidelines." This review focuses on national, Middle Eastern, and international FBDGs and reviewed articles that included FBDGs for adults aged 18–65 years. The exclusion criteria were any articles that included FBDGs on specific target groups, such as pregnant women and individuals with chronic diseases, as well as those that included FBDGs for patients aged <18 and >65 years (Figure 1).

## Results

### Overall Description of the FBDGs

The FBDGs are evidence-based recommendations and guidelines for healthy diets and lifestyles that are adjusted to country-specific needs. These guidelines usually consider sociocultural influences, food production and consumption patterns, public health and nutritional priorities, accessibility, and food composition data. Table 1 lists the countries and years of publication of FBDGs worldwide. The majority of international and Middle Eastern FBDGs were published between 2019 and 2022. Oman led the Middle Eastern countries in publications (pre-2011). At the national level, SA began publishing FBDGs before 2011, and this continued through 2022.

**Table 1:** Summary of the food-based dietary guidelines (FBDGs) worldwide.

| | Before 2011 (n = 7) | 2011–2014 (n = 11) | 2015–2018 (n = 42) | 2019–2022 (n = 105) |
|---|---|---|---|---|
| International (n = 165) | Nambia, Norway, Austria, Saint Vincent and the Grenadines, Saint Lucia, Commonwealth of The Dominica, Spain | South Africa, Malaysia, Australia, India, Denmark, Finland, Greece, Iceland, Sweden, Switzerland, New Zealand | Albania, Denmark, France, Lithuania, Austria, Iceland, Hungary, Belgium, The Netherlands, Turkey, Bulgaria, Norway, Croatia, Portugal, Czech Republic Sweden, Estonia, United Kingdom (3), Germany, Greece, Ireland, Israel, Italy, Latvia, Luxembourg, Malta, Moldovan, Republic Poland, Romania, Russian Federation, Slovenia, Spain, Switzerland, Mexico, Brazil (2), China (2), Dutch, United States of America | Greece, Bahamas, Albania, Antigua and Barbuda, Afghanistan, Malta, Bosnia and Herzegovina, Barbados, Australia (2), Argentina, Thailand, Croatia, Belgium, Austria, Benin, Venezuela, Guyana, Bulgaria, Bangladesh, Indonesia, Hungary, Canada (4), Belize, Jamaica, Italy, China, Bolivia, Kenya, Namibia, Cuba, Brazil, Mexico, Nigeria, Cyprus, Chile, Paraguay, Portugal, Dominica, Colombia, Qatar, Turkey, Dominican Republic, Costa Rica, Seychell, Estonia, Denmark, Sierra Leone ,Fiji, El Salvador, Sweden, Georgia, Finland, United Kingdom, Grenada, France, United States of America (5), Iceland, Germany, Uruguay, Iran, Guatemala, Israel, Honduras, Latvia, India, Oman, Indonesia, Romania, Ireland (2), Saint Lucia, Japan, Saint Vincent and the Grenadines, Lebanon, Spain (2), The former Yugoslav Republic of Macedonia, Malaysia, Mongolia, Nepal, Netherlands (2), Norway, Panama, Philippines, Poland, Democratic People's Republic of Korea, Saint Kitts and Nevis, Slovenia, South Africa, Sri Lanka, Switzerland, Vietnam, Greenland |
| National (n = 11) | **Before 2011** (n = 0) Saudi Arabia | **2011–2014** (n = 1) Saudi Arabia | **2015–2018** (n = 1) Saudi Arabia | **2019–2022** (n = 9) Saudi Arabia |

| | | | | |
|---|---|---|---|---|
| Middle Eastern (n = 46) | **Before 2011** (n = 1) Oman | **2011–2014** (n = 6) Bahrain, Kuwait, Oman, Qatar (2), and United Arab Emirates | **2015–2018** (n = 15) Egypt, Malaysia, Singapore, Vietnam, Thailand, Hong Kong, Indonesia, China, Oman, Turkey, South Africa, Chili, Bolivia, Brazil, Argentina | **2019–2022** (n = 24) Morocco, Egypt, Libya, Tunisia, Somalia, Sudan, Djibouti, Afghanistan, Pakistan, Iran, Syria, Lebanon (2), Jordan, Iraq, Palestine, Yemen, Bahrain, Kuwait, Oman (2), Qatar (2), and United Arab Emirates |

**Table 2:** Food-based dietary guideline formats worldwide.

| Format | | | |
|---|---|---|---|
| **Countries** | **Article** | **Website** | **PDF file** |
| International | 1. United States of America | 1. United States of America | 1. United States of America |
| | 2. United Kingdom | 2. United Kingdom | 2. Brazil |
| | 3. Australia | 3. Australia | 3. China |
| | 4. Canada | 4. Canada | 4. Dutch |
| | 5. Spain | 5. Caribbean | 5. Caribbean |
| | 6. Brazil | 6. Greenland | 6. Denmark |
| | 7. Mexico | 7. Finland | 7. Greece |
| | 8. Netherlands | 8. Iceland | 8. New Zealand |
| | 9. Dutch | 9. Norway (2) | 9. Malaysia (2) |
| | 10. Caribbean | 10. Namibia | 10. Indonesia |
| | 11. Ireland | 11. Saudi Arabia | 11. Thailand |
| | 12. China | | 12. Vietnam |
| | 13. Malaysia (2) | | 13. India |
| | 14. Indonesia | | 14. Arab Gulf Countries |
| | 15. Philippines | | 15. Saudi Arabia |
| | 16. Thailand | | |
| | 17. Vietnam | | |
| | 18. South Africa | | |
| | 19. European | | |
| Middle Eastern | 20. Eastern Mediterranean | - | |
| | 21. Arab Gulf Countries | | |
| National | 22. Saudi Arabia | | |
| Total | 22 | 11 | 15 |

(Table 2) summarizes the data collected on FBDGs worldwide. The majority of references on FBDGs were collected from articles published by various countries (n = 22) regarding their guidelines. Some countries published these guidelines in articles, on websites, or as PDF files. Additionally, some countries, such as the United States of America, the Caribbean countries, and SA, published guidelines in three forms (articles, websites, and PDF files), whereas other countries, such as Malaysia, published multiple versions of the guidelines from the same source (articles and PDF files), and Norway published two versions on the Nordic Council of Ministers website.

**WHO Dietary Guideline Criteria**

The WHO, which is the primary source of healthcare recommendations worldwide, recognizes the need for more precise processes to ensure that the best available research evidence informs all developed guidelines. Therefore, the WHO has developed step-by-step guidelines for planning, developing, and publishing guidelines. The guidelines aim to provide stakeholders and policymakers with credible standards for developing and implementing dietary recommendations.

The WHO Handbook for Guideline Development (2nd edition;

2014) outlines the critical steps involved in guideline development that include the identification of the scope and purpose of the guideline; conducting systematic reviews of the evidence; formulating evidence-based recommendations; and adapting, implementing, and evaluating the guideline [8]. After reviewing the key steps, 12 criteria were summarized and used to establish dietary guidelines. (Table 3) compares the country-wise adherence to the WHO-recommended Twelve Criteria for Establishing Dietary Guidelines.

**Table 3:** WHO criteria compliance of international countries.

| *WHO Criteria | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th | 9th | 10th | 11th | | | | 12th | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Determine Scope | Form working groups | Plan proposal | Reflect WHO values | Declare conflict of interest | Form key Questions & Select outcomes | Conduct systematic review as an evidence of evidence | *Assess quality | Develop recommendation | *Conduct rapid advice guideline for emergency | Follow format | Peer review | Produce | Disseminate | Adaptation | Implementation | Evaluation |
| 1. A global review of food-based dietary guidelines | ✓ | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | NA | X | NA | ✓ |
| 2. European food-based dietary guidelines: A comparison and update | ✓ | NA | NA | ✓ | NA | NA | NA | NA | NA | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 3. Dietary guidelines to nourish humanity and the planet in the twenty-first century. A blueprint from Brazil | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | ✓ | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 4. Dietary guidelines for the Spanish population | ✓ | ✓ | ✓ | ✓ | X | ✓ | NA | NA | ✓ | NA | ✓ | ✓ | NA | NA | NA | X | NA |
| 5. An introduction to the revised food-based dietary guidelines for South Africa | ✓ | ✓ | ✓ | ✓ | X | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | NA | NA | X | X |
| 6. Development and promotion of Malaysian dietary guidelines | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ |
| 7. Dietary guidelines for Americans | ✓ | ✓ | NA | ✓ | NA | NA | ✓ | NA | ✓ | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 8. Dietary guidelines for Chinese residents (2016): comments and comparisons | ✓ | ✓ | NA | NA | NA | NA | ✓ | NA | ✓ | NA | ✓ | NA | NA | NA | NA | NA | NA |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9. Dietary guidelines for Americans 2020-2025 | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | NA | NA | ✓ | NA |
| 10. Australian dietary guidelines Providing the scientific evidence for healthier Australian diets | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | NA | NA | NA | NA |
| 11. The Eatwell Guide - UK dietary guidelines | ✓ | NA | NA | NA | NA | NA | NA | NA | ✓ | NA | NA | NA | NA | NA | NA | NA | NA |
| 12. What is my plate? | NA | NA | NA | NA | NA | NA | NA | NA | ✓ | NA | ✓ | NA | NA | NA | NA | ✓ | NA |
| 13. Canada's dietary guidelines | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | NA | NA | NA | NA |
| 14. Dietary guidelines for Indians | ✓ | ✓ | ✓ | ✓ | X | NA | NA | ✓ | NA | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 15. Development of healthy and sustainable food-based dietary guidelines for the Netherlands | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 16. The 2015 Dutch food-based dietary guidelines | ✓ | ✓ | ✓ | NA | ✓ | NA | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | NA | NA | NA | NA |
| 17. New Chinese dietary guidelines: healthy eating patterns and food-based dietary recommendations | ✓ | ✓ | NA | ✓ | X | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | NA | ✓ |
| 18. Nutrition policy: developing scientific recommendations for food-based dietary guidelines for older adults living independently in Ireland | ✓ | ✓ | NA | NA | NA | NA | ✓ | NA | ✓ | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 19. Food-based dietary guidelines: a comparative analysis between the Dietary Guidelines for the Brazilian population 2006 and 2014 | ✓ | ✓ | ✓ | ✓ | NA | NA | ✓ | NA | ✓ | NA | ✓ | NA | NA | NA | NA | NA | NA |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20. Updating the food-based dietary guidelines for the Spanish population: The Spanish Society of Community Nutrition (SENC) proposal | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | NA | X | NA | ✓ |
| 21. Comparison of methodological quality between the 2007 and 2019 Canadian dietary guidelines | ✓ | NA | NA | ✓ | ✓ | NA | NA | NA | NA | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 22. Evidence use in the development of the Australian dietary guidelines: A qualitative | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | NA | ✓ | ✓ | NA | NA | NA | NA | NA |
| 23. Using food intake records to estimate compliance with the Eatwell Plate dietary guidelines | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 24. The Mexican dietary and physical activity guidelines: moving public nutrition forward in a globalized world | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | NA | NA | X | NA |
| 25. Healthy diet | ✓ | ✓ | ✓ | ✓ | X | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 26. Global dietary guidelines and dietary reference intake (DRIs)-Commonwealth of The Dominica- developing food-based dietary guidelines to promote healthy diets and lifestyles in the Eastern Caribbean | ✓ | ✓ | NA | ✓ | NA | ✓ | ✓ | X | ✓ | NA | ✓ | ✓ | ✓ | ✓ | X | ✓ | ✓ |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27. Global dietary guidelines and Dietary Reference Intake (DRIs)-Greenland | ✓ | ✓ | NA | ✓ | NA | X | NA | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | X | X |
| 28. Global dietary guidelines and Dietary Reference Intake (DRIs)-Austria- food-based dietary Guidelines in Austria. | ✓ | NA | ✓ | ✓ | X | NA | NA | NA | ✓ | X | ✓ | NA | NA | NA | ✓ | ✓ | X |
| 29. Global dietary guidelines and Dietary Reference Intake (DRIs)-Denmark- | ✓ | ✓ | NA | ✓ | NA | X | NA | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | X | X |
| 30. Global dietary guidelines and Dietary Reference Intake (DRIs)-Finland- | ✓ | ✓ | NA | ✓ | NA | X | NA | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | X | X |
| 31. Global dietary guidelines and Dietary Reference Intake (DRIs)-Greece- dietary guidelines for adults in Greece | ✓ | ✓ | NA | ✓ | NA | X | NA | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | X | X |
| 32. Global dietary guidelines and Dietary Reference Intake (DRIs)-Iceland- | ✓ | ✓ | NA | ✓ | NA | X | NA | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | X | X |
| 33. Global dietary guidelines and Dietary Reference Intake (DRIs)-Norway | ✓ | ✓ | NA | ✓ | NA | X | NA | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | X | X |
| 34. Global dietary guidelines and Dietary Reference Intake (DRIs)-Sweden | ✓ | ✓ | NA | ✓ | NA | X | NA | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | X | X |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35. Global dietary guidelines and Dietary Reference Intake (DRIs)-Switzerland- food pyramid of the Swiss Society for Nutrition | ✓ | ✓ | NA | ✓ | X | NA | NA | NA | ✓ | NA | ✓ | ✓ | ✓ | NA | X | X | X |
| 36. Global dietary guidelines and Dietary Reference Intake (DRIs)- Namibia- food & nutrition guidelines for Namibia | ✓ | ✓ | ✓ | ✓ | X | X | X | ✓ | ✓ | X | ✓ | ✓ | ✓ | NA | NA | NA | NA |
| 37. Global dietary guidelines and Dietary Reference Intake (DRIs)-New Zealand | ✓ | ✓ | ✓ | ✓ | NA | ✓ | X | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | NA | NA |
| 38. A global review of food-based dietary guidelines | ✓ | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | NA | X | NA | ✓ |
| 39. European food-based dietary guidelines: A comparison and update | ✓ | NA | NA | ✓ | NA | NA | NA | NA | NA | NA | ✓ | NA | NA | NA | NA | NA | NA |
| 40. Dietary guidelines to nourish humanity and the planet in the twenty-first century. A blueprint from Brazil | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | NA | ✓ | NA | ✓ | NA | NA | NA | NA | NA | NA |

**Note*:** NA: Not available, WHO: World Health Organization

**WHO criteria:** Organization, W. H. (Ed.). (2014). Who handbook for guideline development (2nd ed., Vol. World Health Organization). World Health Organization.

***Assess quality of evidence:** the WHO use Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach to assess, develop, and evaluate quality of evidence (WHO handbook for guideline development, 2nd ed chapter 9).

***Conduct rapid advice guideline for emergency:** This step will conduct depending on the need in time of emergency. Emergencies may be classified as natural, technological, or conflict-related and may be of sudden onset (e.g. earthquakes, tsunamis, chemical crises).

### 1. Scope Determination

Scope determination involves defining the scope and purpose of the guidelines. This includes identifying health problems or conditions, specifying the target population, determining interventions or strategies to be implemented, and delineating the expected outcomes. The scoping process also involves considering relevant ethical, social, and economic issues as well as potential implementation-related challenges. The scope of the guidelines should be based on a thorough review of the existing evidence and stakeholder inputs and should be clearly defined to guide the development of relevant, feasible, and practical recommendations.**Formation Of 2.**

### 2. Working Groups

The WHO recommends that working groups be established when developing guidelines. These working groups should possess various abilities, viewpoints, duties, and assignments. Although they can be formed during different periods of guideline development, their collective efforts aim toward generating guidelines of exceptional quality. Therefore, to elucidate Brazil's dietary guidelines, the Brazilian MOH undertook a project with technical assistance from the Centre for Epidemiological Studies on Health and Nutrition at the University of São Paulo and support from the PAHO [9]. The project involved two formal meetings to discuss the guide's main items with various professionals and representatives from across Brazil and regional meetings in all 26 Brazilian states and the Federal District [9].

### 3. Plan Proposal

Planning the guideline proposal is the next step after assembling the working group. A planning proposal for a guideline comprises a comprehensive written document that outlines the proposed guideline, including its rationale, scope, methodology, the stakeholders involved in its development, and the administrative procedures required for the WHO guidelines. Accordingly, the dietary guidelines for the Spanish population were initiated through a proposed model of the guide named "The Bilbao Declaration (2000): Ten Steps for a Healthy Diet." This is a summary of the draft proposal that was suggested by the scientific committee of the 4th Congress of the Spanish Society of Community Nutrition and was meant to discuss the basic points to consider in the new edition of the Dietary Guidelines for Spanish populations [10].

### 4. Reflection of WHO Values

Based on the guideline-generating criteria, the guidelines must meet the WHO values and principles. To achieve this, attention must be paid to equity, human rights principles, gender, and other social health determinants. These considerations should be integrated into every step of the guideline-development process. For instance, the South African dietary guidelines incorporate both genders (males and females) and children of different age groups, which is considered an essential factor when updating dietary guidelines [11]. Similarly, the Malaysian Dietary Guidelines recognize pregnant, lactating, and working mothers as a significant group when creating and promoting food-based recommendations [12].

Furthermore, the dietary guidelines for Chinese residents suggest that the current Chinese guidelines consist of three parts: the dietary guidelines for the general population, the dietary guidelines for the specific population, and the practice of a balanced diet of Chinese residents [13]. Dietary guidelines for the general population form the core of these guidelines. These specific guidelines align with the 4th step of the WHO Criteria for Establishing Dietary Guidelines, which stipulates that the country should take equity, human rights, gender, and social determinants into consideration when developing dietary guidelines.

### 5. Declaration of Conflicts of Interest

The WHO criteria emphasize the importance of openly acknowledging and managing any conflicts of interest when developing unbiased and reliable recommendations and guidelines. The Australian Dietary Guidelines agenda provides a record of interest organized by the National Health and Medical Research Council (NHMRC), and relevant information is made publicly available on the NHMRC website to ensure transparency (Eat for Health Australian Dietary Guidelines 2013) [14]. However, some guidelines could be associated with misconduct related to the declaration of conflict of interest. For instance, according to DeSalvo et al., the Dietary Guidelines for Americans do not mention any declarations or disclosure of interests within the guide [15].

### 6. Formulation of Key Questions and Select Outcomes

Proper question formulation is essential because it significantly affects the final recommendations that the dietary guidelines must propose. The WHO criteria suggest a format for expressing key questions when developing guidelines: the PICO format— population, intervention (or exposure), comparator, and outcome. These four elements should be considered in any question that governs a systematic search for evidence. Monteiro et al. reported a Brazilian blueprint to generate the guidelines required for the Brazilian population [9].

### 7. Conduct A Systematic Review of the Evidence

A systematic review is a unique literature review that minimizes subjectivity and prejudice while offering additional benefits. A review of an articulated question that uses systematic and explicit techniques is needed to identify, choose, and evaluate relevant research and to examine data from studies included in the review [16].

### 8. Assess the Quality of the Evidence

The quality of evidence is defined as the degree of confidence in the accuracy of an effect or relationship estimate [17]. As all judgments to downgrade recommendations include subjective assessments, agreement on the level of evidence supporting each outcome is crucial. Therefore, a minimum number of members must decide to downgrade at least two researchers. It must be determined whether restrictions pose a significant risk [16]. To evaluate the quality of a body of evidence and create and publish recommendations, the WHO employs the GRADE approach [8]. However, the evidence pertained to significant nutritional and health concerns of the Chinese population, as highlighted in the technical reports, expertise of the expert panel, and pertinent experiences from other nations with the updating of dietary guidelines, which were all considered when establishing the Chinese Dietary Guidelines (CDG) published in 2016 [18]. Every suggestion was subjected to peer evaluation to guarantee that it was grounded to food items and simple to implement [18].

### 9. Develop Recommendations

The PICO format must be followed, the recommendations must be concise and actionable, and the strength of the evidence supporting the quality must be indicated. In addition, recommendations should explain the strength, conditionality, and support for or opposition to a particular intervention. The CDGs that were published in 2016 formulated dietary guidelines that advocated better dietary outcomes by presenting a "balanced dietary pattern" [18]. The recommendations were based on the most recent scientific evidence regarding the relationship between food and health, with equal attention paid to the dietary and public health issues faced by the Chinese community [18].

### 10. Development of Rapid Advice Guidelines in Emergency Situations

Assessing the public health event, novelty of the uncertainty, and urgency of the request for a rapid advice guideline constitute the first steps in the process, instead of conducting a thorough search for every potential source, such as pieces of literature, reports, and databases, among others. The search then focuses on identifying the most relevant literature, including significant primary studies and excellent systematic reviews [19]. In 2020, Li et al. created a guideline that embraces the Institute of Medicine's revised guideline definition of the Institute of Medicine and complies with the WHO requirements for a rapid advice guideline [20].

### 11. Formatting, Peer Review, Production, and Dissemination

The WHO guidelines aim to improve population and individual health and well-being. To this end, guidelines must be broadly disseminated, accepted, or updated, and recommendations must be implemented. First, the correct style must be followed. For instance, systematic reviews should be documented in a standard manner using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines [21], and the final report of the systematic review should typically include GRADE evidence profiles [21]. The second phase, before dissemination, is the collection of declarations of interest from each peer reviewer, especially the external review group that is primarily in charge of peer review [8]. The Mexican Dietary and Physical Activity Guidelines were developed with 11 external expert advisors from the United States, Brazil, Colombia, Guatemala, and Mexico. Three peer reviewers and committee members examined the guidelines before publication [22]. In line with the American Psychological Association, peer reviewers' duties include highlighting exceptional original manuscripts that fall within the parameters of publication and supporting the editor's impartial evaluation of the manuscript. These reviewers should be able to deliver honest evaluations without conflicts of interest and submit reviews as scheduled [23].

### 12. Adaptation, Implementation, and Evaluation

The stages of adaptation, implementation, and evaluation complete the development of the guidelines. The WHO guidelines can be modified at regional, national, or subnational levels while considering local conditions and resource constraints. The implementation of these guidelines should be viewed from the outset of their development. National or subnational organizations are typically in charge of implementation; therefore, the development of guidelines is essential. Data collection and analysis systems are employed to monitor and evaluate the impact and efficacy of the guidelines and to determine the next course of action [8]. Calder-Sprackman et al. addressed the particular difficulties faced by residents in a Canadian Emergency Medicine (EM) training program for adapting, implementing, and evaluating a peer-support wellness and de-briefing program [24].

### Middle Eastern dietary guidelines

Table 4 displays the dietary guidelines for Middle Eastern countries and indicates whether they align with the WHO criteria. In terms of sustainability, the "sustainability in the Qatar national dietary guidelines, among the first to incorporate sustainability principles" was the first FBDG to incorporate sustainability principles, in addition to being the most adherent to the WHO criteria (10 out of 12). Furthermore, the "Food-based Dietary Guidelines of Arabic-speaking Countries: A Culturally Congruent Profile" and "Food-Based Dietary Guidelines Technical Background and Description Task Force for the Development and Implementation of the Omani Food-Based Dietary Guidelines" were the second most compliant guidelines that implemented the WHO criteria. All FBDGs in Middle Eastern countries did not apply or have any available information regarding the four key criteria: "Assess the quality of evidence," "Conduct rapid advice guideline for an emergency," "Implementation," and "Evaluation." The "Adherence to Recommended Dietary Guidelines and the Relationships with the Importance of Eating Healthy in Egyptian University Students" and "Dairy Recommendation in Food-based Dietary Guidelines and Dairy" guidelines had no information available about the whole criteria that were applied to either FBDG.

**Table 4:** Adherence of Middle Eastern countries to the WHO criteria.

| | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th | 9th | 10th | 11th | | | | 12th | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *WHO criteria | Determine Scope | Form working groups | Plan proposal | Reflect WHO values | Declare conflict of interest | Form key Questions & Select outcomes | Conduct systematic review as an evidence | *Assess quality of evidence | Develop recommendation | *Conduct rapid advice guideline for emergency | Follow format | Peer review | Produce | Disseminate | Adaptation | Implementation | Evaluation |
| 1. Food-based dietary guidelines for the Arab Gulf countries | ✓ | ✓ | ✓ | ✓ | NA | X | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | ✓ | NA | NA | NA |
| 2. Food-based dietary guidelines around the world: Eastern Mediterranean and Middle Eastern countries | ✓ | ✓ | NA | ✓ | ✓ | X | ✓ | NA | X | NA | ✓ | ✓ | NA | NA | NA | NA | NA |
| 3. Food-based dietary guidelines of Ara- | ✓ | ✓ | ✓ | ✓ | ✓ | X | ✓ | NA | NA | NA | ✓ | ✓ | NA | NA | NA | NA | NA |
| 4. The food dome; dietary guidelines for Arab countries | ✓ | NA | NA | ✓ | NA | NA | ✓ | NA | ✓ | NA | X | NA | NA | NA | NA | NA | NA |
| 5. Dairy recommendation in food based dietary guidelines and dairy | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6. Food based dietary guidelines technical background and description task force for the development and implementation of the Omani food based dietary guidelines | ✓ | ✓ | ✓ | ✓ | X | ✓ | ✓ | NA | ✓ | NA | ✓ | NA | NA | X | ✓ | NA | NA |
| 7. Sustainability in the Qatar national dietary guidelines, among the first to incorporate sustainability principles | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | NA | ✓ | NA | ✓ | NA | NA | NA | NA |
| 8. Adherence to recommended dietary guidelines and the relationships with the importance of eating healthy in Egyptian university students | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Note*:** NA= Not available

**WHO criteria:** Organization, W. H. (Ed.). (2014). Who handbook for guideline development (2nd ed., Vol. World Health Organization). World Health Organization.

***Assess quality of evidence:** the WHO use Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach to assess, develop, and evaluate quality of evidence (WHO handbook for guideline development, 2nd ed chapter 9).

***Conduct rapid advice guideline for emergency:** This step will conduct depending on the need in time of emergency. Emergencies may be classified as natural, technological, or conflict-related and may be of sudden onset (e.g. earthquakes, tsunamis, chemical crises).

**National Dietary Guidelines (SA)**

Table 5 indicates that the Saudi FBDGs are more likely to follow the 12 WHO criteria. Almost all the criteria have been used to conduct an FBDG, except for four that have yet to be used or reported to be used during the development of any Saudi FBDGs: declare a conflict of interest, conduct rapid advice guidelines for emergency, peer review, and evaluation. "A Healthy Food Guide for the Health Practitioners" was the highest guide implementing the WHO criteria (10 out of 12) and the only national guide that provided information about conducting a systematic review as evidence to support the guide information. The guidelines for consuming caffeine-containing products were the only guide state-forming key questions during the development and selection of the target outcomes. However, some guidelines might not follow the WHO criteria because the target could be related to dietary policies that are excluded from following the WHO dietary criteria, such as the criteria of forming the working group, reflecting WHO values, and developing any recommendations (e.g., "A Guide to Nutrition and Health Claims").

**Table 5:** Adherence of Middle Eastern countries to the WHO criteria.

| | 1st | 2nd | 3rd | 4th | | 6th | 7th | 8th | 9th | 10th | 11th | | | | 12th | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *WHO criteria | Determine Scope | Form working groups | Plan proposal | Reflect WHO values | Declare conflict of interest | Form key Questions & Select outcomes | Conduct systematic review as an evidence | *Assess quality of evidence | Develop recommendation | *Conduct rapid advice guideline for emergency | Follow format | Peer review | Produce | Dissemiate | Adaptation | Implementation | Evaluation |
| 1. The dietary guidelines for Saudis - the healthy food palm | ✓ | ✓ | ✓ | ✓ | NA | X | NA | X | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | ✓ | NA |
| 2. A guide to nutrition and health claims | ✓ | NA | NA | NA | NA | X | NA | NA | X | NA | X | NA | ✓ | ✓ | ✓ | ✓ | NA |
| 3. Global dietary guidelines and dietary reference intakes (DRIs)- Saudi Arabia - food-based dietary guidelines - Saudi Arabia | ✓ | ✓ | ✓ | ✓ | NA | X | NA | X | ✓ | NA | ✓ | NA | ✓ | ✓ | NA | ✓ | NA |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4. A healthy food guide for the health practitioners | ✓ | ✓ | NA | ✓ | X | NA | ✓ | X | ✓ | NA | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA |
| 5. The Saudi healthy plate guide | ✓ | ✓ | NA | ✓ | X | NA | NA | X | ✓ | NA | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA |
| 6. Your health guide in Ramadan | ✓ | ✓ | X | ✓ | X | X | NA | NA | ✓ | NA | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA |
| 7. Guidelines for consuming caffeine-containing products | ✓ | ✓ | NA | ✓ | X | ✓ | NA | NA | ✓ | NA | NA | NA | ✓ | ✓ | NA | NA | NA |
| 8. The guide for the food classification model in the Kingdom of Saudi Arabia | ✓ | ✓ | NA | ✓ | X | NA | NA | NA | ✓ | NA | NA | NA | ✓ | ✓ | ✓ | ✓ | NA |

**Note*:** NA = Not available

**WHO criteria:** Organization, W. H. (Ed.). (2014). Who handbook for guideline development (2nd ed., Vol. World Health Organization). World Health Organization.

***Assess quality of evidence:** the WHO use Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach to assess, develop, and evaluate quality of evidence (WHO handbook for guideline development, 2nd ed chapter 9).

***Conduct rapid advice guideline for emergency:** This step will conduct depending on the need in time of emergency. Emergencies may be classified as natural, technological, or conflict-related and may be of sudden onset (e.g. earthquakes, tsunamis, chemical crises).

The Saudi dietary guidelines reflect the growing recognition of the importance of healthy eating habits and physical activity in maintaining good health and preventing chronic diseases. These guidelines can improve overall health and well-being and reduce the risk of developing chronic diseases.

## Discussion

Noncommunicable Diseases (NCDs), such as obesity, diabetes, and cardiovascular diseases, are strongly related to nutrition and diet-related lifestyles. In the Middle Eastern regions, especially in Arabic-speaking countries, the prevalence of NCDs has increased. One of the reasons for this is an unbalanced diet. Developing healthy FBDGs is essential for reducing the expected morbidity and mortality associated with NCDs. At the national level, the Healthy Food Palm established suitable graphics and guidelines that consider Saudi culture and habits and incorporate servings of various food groups to help lower the prevalence of diet-related diseases in the Saudi population.

In general, the 12 WHO criteria are a form of guidance; therefore, not all criteria were covered by countries that were developing FBDGs, and no country worldwide covered all the 12 criteria. Usually, each country modifies its FBDG according to the available resources required to meet specific criteria. Both national and international FBDGs attempted to match almost all WHO guideline criteria and chose the best and most suitable criteria for adoption. The findings show that most national guidelines cover some of the 12 WHO criteria, such as declaring a conflict of interest, conducting a systematic review as evidence, peer reviewing the guidelines, and evaluating the guidelines. Moreover, the "evaluation" criteria are not undertaken in any of the national FBDGs. Evaluation is critical for policymakers to ensure that the guide's aim is achieved and that it is appropriate for all groups. Therefore, national guidelines are usually presented by the government, which evaluates the guidelines as part of the internal process before publishing, and the evaluation criteria typically do not consider them as part of the internal process. Moreover, the evaluation of FBDGs by individuals before

publication is important for greater accuracy. Currently, there is a national platform in SA for public consultation (a public consultation platform) to evaluate the guidelines before publication.

Adaptation depends on the necessity of the guidelines and the availability of resources. In addition, the findings indicate that international dietary guidelines are rarely adopted in other countries. Furthermore, in national and international dietary guidelines, almost all the FBDGs implement two criteria: "determine scope" and "develop a recommendation."

SA has several national dietary guidelines that have been developed by authorities, such as the MOH and SFDA. These guidelines are based on the dietary habits and preferences of the Saudi population and consider the country's cultural and religious practices. For instance, the SFDA's guidelines emphasize traditional Saudi foods and beverages such as dates and Saudi coffee. These guidelines help individuals in SA achieve a balanced and healthy diet that supports their overall health and well-being.

As the Saudi population continues to grow and evolve, it is essential to update dietary guidelines to reflect the changing needs and preferences of the community. Updating the guidelines can lead to better health outcomes for the population. In addition, by incorporating the latest nutritional and health research, the guidelines can provide more accurate and relevant information to help individuals in the community make informed decisions about their diet, which can lead to a reduction in chronic diseases such as obesity, diabetes, and heart disease. However, updating these guidelines remains challenging. Significant resources and expertise may be required to develop new, evidence-based, and culturally appropriate guidelines. Therefore, the WHO criteria state the best reference for building or creating FBDGs, with modifications according to the available resources.

## Conclusions

FBDGs promote healthy eating habits and prevent chronic diseases in the Saudi population. Every country is trying to develop and update its FBDGs regularly. The existence of unified standards from an international source, such as the WHO, which can be referred to as a reference when developing guidelines, is considered a basis for relying on or adopting FBDGs by other countries. In addition, having a reference for all countries helps unify the basis of FBDGs and avoids discrepancies between guidelines worldwide.

Based on this literature review of the guidelines (international, Middle Eastern, and national), it was noted that the 12 WHO criteria can be amended according to the available resources in each country for following the guidelines. Further, this review showed that updating the current FBDGs to align with the 12 WHO criteria is preferable. The WHO criteria could be converted into "scoring criteria" to assess the quality of evidence more accurately. Future studies that focus on comparing national FBDGs using a scoring system and developing a user guide for national FBDGs are needed.

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## Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Disclaimer

The views expressed in this paper are those of the authors and do not necessarily reflect those of the SFDA or its stakeholders. Guaranteeing the accuracy and the validity of the data is a sole responsibility of the research team.

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